

**U.S. Department of the Interior
Bureau of Land Management**

**Carpenter 1 Fire Emergency Stabilization and
Rehabilitation — Environmental Assessment
DOI-BLM-NV-S020-2014-0002-EA**

PREPARING OFFICE

U.S. Department of the Interior
Bureau of Land Management
Red Rock Canyon National Conservation Area Field Office
4701 North Torrey Pines Drive
Las Vegas, NV 89130



Introduction

Identifying Information:

Title, EA number, and type of project:

Carpenter 1 Fire Emergency Stabilization and Rehabilitation (ESR) in Red Rock Canyon National Conservation Area

DOI-BLM-NV-S020-2014-0002-EA

Location of Proposed Action:

Red Rock Canyon National Conservation Area (RRCNCA) Harris Springs Area, and Las Vegas Field Office Trout Canyon Area

Township 20 S, Range 58 E, Sections 5,8,18,19

Township 19 S, Range 58 E, Section 20, 32

Name and Location of Preparing Office:

Southern Nevada District Office

Red Rock/Sloan Field Office

4701 N Torrey Pines Drive

Las Vegas, NV 89130

Identify the subject function code, lease, serial, or case file number:

DOI-BLM-NV-S020-2014-0002-EA

Applicant Name:

Bureau of Land Management (BLM)

Purpose and Need for Action:

The Carpenter 1 wildland fire was a reported lightning-caused ignition on July 1, 2013 in steep terrain with no direct access. The fire was contained on August 18, 2013 and burned approximately 27,881 acres of land across three jurisdictional boundaries: 26,939 acres of Forest Service—managed lands (FS) in the Spring Mountains National Recreation Area of the Humbolt-Toiyabe National Forest (SMNRA), 853 acres of BLM-managed land in the RRCNCA, and 89 acres of private land. Lands managed by the BLM lie between the FS land and the private property (as well as city lands of Las Vegas and Pahrump and associated infrastructure). See the attached map of the burned area for more details. The portion of the burned area that occurs on BLM land is within the RRCNCA in Clark County, Nevada. RRCNCA is located about 10 miles west and northwest of the city of Las Vegas. Commercial and residential development goes right up to the eastern boundary of the NCA lands. This NCA is highly visited due to vast recreational experiences available, scenic beauty, geological, cultural and biological resources. The western edge of the fire burned very close to, but did not cross, the boundary for the BLM

Las Vegas Field Office (LVFO). Even though this portion of BLM land did not burn it is being heavily affected by the adjacent burned area.

Human health and safety (both of the public recreating on federal lands, employees, as well as those with residences impacted by the burned area) are the major concern for this fire due to the potential for extreme flooding and debris flow coming onto BLM land from the burned area on FS land. Light precipitation events on the burned area have already resulted in disproportionately large flood events and debris flows due to the soil damage and lack of vegetation. Debris flows from 0.2 inches of rain came all the way down the mountain and flooded the residential streets in northwest Las Vegas. Severe flooding was also seen near the town of Pahrump as a result of rain events on the burned area. Nye and Clark County cooperators are extremely concerned about flood waters washing out portions of the highway and other heavily used roads. There are also private properties on the mountain which are surrounded by BLM lands that may be at risk. During a recent precipitation event, flooding as well as ash and debris flow from Trout Canyon Wash impacted Stump Springs which lies 17 miles southwest of the burned area. Stump Springs was covered by 2–6 inches of mud ash and other debris deposited by the runoff.

Other issues of concern from this fire are soil and resource value losses and impacts to threatened and endangered species and their habitat. The fire has affected the soil properties and the landscape's ability to slow down the energy of the precipitation and surface water. A desert tortoise (federally threatened species) translocation area lies on BLM land just downstream from the burned area near Trout Canyon. Debris flows and flooding coming off the burned area have the potential to completely wash out the translocation area, killing the tortoises directly, flooding burrows, and removing forage.

Additionally, noxious and invasive weeds are a cause for concern in the burned area. Nevada noxious weeds such as Russian knapweed, puncturevine, and salt cedar are known to occur in lands surrounding the burned area. Invasive weeds such as cheatgrass and red brome can also be found surrounding the burned area. Invasive grasses such as these can drastically alter fire regimes and put the area at high risk of a re-burn. Many of these weeds are disturbance colonizers and are taking advantage of the lack of competition due to burned-off native vegetation, and invading the burned area. Weed invasions will prevent native vegetation from growing back and will severely degrade habitat for wildlife.

Scoping, Public Involvement and Issues:

This assessment has been scoped and reviewed internally by BLM resource specialist to ensure that all natural and cultural resources are being responded to sensitively and appropriately. Their comments and evaluations are included in this environmental assessment (EA). Upon completion the document will be uploaded to the NEPA Register where the public may view a project summary.

Proposed Action and Alternatives

Description of the Proposed Action:

Under a separate NEPA analysis and Decision Record (DOI-BLM-NV-S020-2013-0012-EA), the BLM is enacting a temporary closure (5 years) to the public (vehicles, hiking, equestrian and all other uses) of about 5,683 acres in the RRCNCA due to the Carpenter 1 Fire, to provide for public safety and to allow for recovery of the burned area and treatments to be completed. This EA covers the post-fire stabilization and rehabilitation treatments that will occur to the burned area in and around the temporary closure. For detailed descriptions of treatments, closures, monitoring, and maps, please refer to the Carpenter 1 Emergency Stabilization and Rehabilitation Plan (ESR Plan, 10/2013). The following is a summary of treatment activities:

Seeding:

Broadcast seeding with native species will take place on up to 853 acres of BLM land along the FS/BLM boundary in the Harris Springs Area. This will likely be a ground broadcast seeding application with a mixture of grasses, forbs, and shrubs. Aerial seeding may also be implemented if needed to improve efficiency for large seed mixes or in areas that are difficult to access by ground. Potential seed mixes are outlined in the Carpenter 1 ESR plan and are comprised of all native species and will be certified weed free. Whether the seeding applications are accomplished via air or ground, they will not result in any new disturbance. Vehicles will remain on existing roads, trails, and washes. Helicopter loading and landing sites will only be in previously disturbed areas. This seeding will help prevent the invasive and noxious weeds from spreading into the burned area, as well as help to stabilize the soil and reduce runoff and debris flow.

Weed Monitoring and Treatment:

The area surrounding the fire contains populations of cheatgrass and red brome, which are disturbance colonizers and are likely to move into the burned area. Levels of invasive weeds will be monitored according to the protocol in the ESR plan and treated accordingly. If any weeds designated as noxious on the NV Noxious Weed List (maintained by the Department of Agriculture) are found on the burned site, it will be reported to the SNDO Weed Specialist and treatment will be scheduled as soon as possible. If weed invasion occurs into the burned area, weeds will be treated by hand-pulling and other integrated weed management practices. If chemical treatment is needed, herbicides selected will be from the BLM list of approved herbicides and be appropriate for the weeds being treated and the project site. Weed monitoring and treatment will not create new disturbance. Access will occur using existing roads, washes, and trails, and by foot in areas that can not be accessed on existing roads, washes, and trails.

Soil Stabilization:

Burned snags will be felled throughout the burned area to help stabilize soil and catch seeds. These areas will be accessed by existing roads and trails, and then by foot. Burned trees will be felled using chainsaws or handsaws. If additional soil stabilization is determined to be needed through monitoring, natural materials such as straw mulch or wattles may be applied to the burned area. All soil stabilization and flood control materials will be certified weed-free. Soil stabilization treatments will be concentrated on slopes and areas most likely to erode or create sediment transport.

Trout Canyon Wash Slope Protection:

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Grouted rip-rap slope protection around the headwalls, upstream and downstream of the concrete culvert crossing at Trout Canyon Road and Trout Canyon Wash will be installed and monitored. This will prevent the area from further erosion and avoid a wash-out of the road and potential negative impacts to the desert tortoise translocation site downstream from the culvert. The area in need of slope protection is already disturbed surrounding a culvert and construction will be staged in existing disturbed sites. Flow gauges may be installed in various areas in and around the burned area to determine if treatments are effectively slowing down surface flows. As monitoring indicates, check dams, rip-rap, or other flood control structures may be installed in other portions of the project area as needed to slow the movement of water across the impacted area.

Repair Infrastructure:

The road crossing the Trout Canyon Wash leading to the BLM Kiup Springs site will be regraded to connect the Trout Canyon Road to the Kiup Springs Road. Additionally, the NCA Road west of Kyle Canyon, leading to Grapevine Springs was washed out in a post-fire flooding event and will need to be regraded. No new disturbance will be created and the roads will remain in their original footprint. The material that washed down the roadway can be re-graded and repairs should not require additional material. Infrastructure throughout the area will be monitored continually and road segments may be regraded as needed within the existing disturbance footprint. Signage, gates, fence segments, and interpretive kiosks may be installed in existing disturbed areas throughout the project area to guide the public, enforce closures, educate, and provide for human health and safety.

Minimization Measures Included in Project Design

The following minimization measures and stipulations have been built into the project design in order to avoid or minimize impacts to resources as a result of the project:

Threatened and Endangered Species:

The proposed project area is above 3,000 feet elevation and is not suitable tortoise habitat. However, access to the project area traverses low to moderate density tortoise habitat. All vehicle and equipment activities will take place in existing roads, turnouts and disturbed areas. Additionally, compliance with the following special stipulations will help to ensure that no effect to desert tortoises occurs:

- A speed limit of 25 miles per hour shall be required for all vehicles travelling on the existing access roads;
- Should a desert tortoise enter the area of activity, all activity shall cease until such time as the animal has left the area on its own accord;
- Workers will be instructed to check underneath all vehicles and equipment before moving them as tortoises often take cover underneath parked vehicles during the active season;
- Workers will be provided educational information on the desert tortoise with includes the legal protection and consequences for the violation of the Endangered Species Act.

Vegetation and Soils:

Sites that are not accessible from existing roads will be reached by hiking; there will be no cross county vehicle travel.

Description of Alternatives Analyzed in Detail:

No Action Alternative:

The BLM would take no further action on the Carpenter 1 burned area. No treatments to stabilize soils, prevent weed spread, foster revegetation, and protect habitat would occur in response to the fire and associated flooding. No further action to protect health and safety would be taken. Washed out roads and routes would not be repaired.

Alternatives Considered but not Analyzed in Detail

In light of the flooding which has been occurring since the fire, an analysis was conducted by a BLM Engineer and a BLM Hydrologist, in which they evaluated the burned area to determine how damage upstream on FS land would impact the BLM lands downstream. In this analysis, it was determined that due to the magnitude of increased flows reaching the BLM boundaries, any sustainable and effective engineering measures would be better suited for implementation upstream where the source of the erosion is occurring, and where flows can be controlled by practical and cost effective engineering measures. However, all upstream portions of the burned area occur on FS land and efforts to slow down the water as far down as the BLM boundary would be far less effective. This type of flood control is not part of the Forest Service Burned Area Report (Reference FSH 2509.13).

The BLM Engineer wrote some engineering recommendations, that if taken upstream, would improve the flooding problems on BLM lands. The BLM Engineer estimated that undertaking upstream flood control would cost approximately \$863,000. In light of these recommended treatments being in a different agencies jurisdiction, another BLM engineering write-up was requested to determine if there were any actions that could be taken on the BLM land to significantly improve the situation. The engineer determined that a series of check dams and rock gabions could be installed at the BLM boundary, however, recent flows were calculated to be 4 to 6 times greater than the pre-fire flow. With this velocity and magnitude of water, treatment as far downstream as the BLM boundary has a high likelihood of getting washed out in a flooding event and will not be sufficient in reducing water velocity. The upstream resources and properties will incur considerable damages and loss that will continue exacerbating the downstream impact due to the velocities and amount of debris that is transported. Implementing treatments such as these would incur a cost of approximately \$426,000, and the risk of failure of these structures would be high.

These options were not moved forward for further detailed analysis because the first option would effect lands managed by a different agency, and the second option would incur great expense with little chance of success. The BLM burned area is 853 acres (approximately 3% of the entire burned area) and the costs to implement these options is not commensurate with the number of acres burned on BLM lands, considering the low chance of success.

Conformance

This document is prepared in compliance with the National Environmental Policy Act (NEPA). Its purpose is to analyze the effects of the proposed action, alternatives, and recommended mitigation measures that would eliminate or lessen environmental impact. The action is tiered to and is consistent with the Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS)

(BLM 2007). The action is also in conformance with the Las Vegas Field Office Fire Management Plan (2004) for the Red Rock High Elevation Planning Unit, the Las Vegas Field Office Noxious Weed Plan (2006) and all applicable BLM Emergency Stabilization and Rehabilitation (ESR) manuals, handbooks, and guidance. The proposed action follows the plan detailed in the Carpenter 1 Fire ESR Plan (2012).

The proposed action is in conformance with the BLM Red Rock Canyon NCA Resource Management Plan (RMP) approved May 20, 2005. The “Vegetation” section of the RRCNCA RMP Record of Decision includes management actions to restore plant productivity on disturbed areas and to maintain or improve the condition of vegetation communities.

Affected Environment:

A detailed description of the of the affected environment is contained in the 2005 RRCNCA RMP.

The table below (Table 1) summarizes the environmental attributes that have been reviewed, whether they may be affected by the proposed action, and the rationale for that determination. Elements that are not present or are present but would not be affected will not be discussed further in this EA. Resources that are present and may be affected by the proposed action will be discussed further in the Affected Environment and Environmental Consequences section of this EA.

Table 1. Affected Resources Table

Resource Area	Not Present	Present/ Not Affected	Present/ Affected	Rationale
Air Resources		X		The proposed action will not impact air quality.
Area of Critical Environmental Concern (ACEC)	X			The proposed project area is not within any wildlife ACEC or any critical desert tortoise habitat.
BLM Natural Areas	X			There are no BLM natural areas in the project area.
Greenhouse Gas Emissions		X		Currently there are no emission limits for suspected Greenhouse Gas (GHG) emissions, and no technically defensible methodology for predicting potential climate changes from GHG emissions. However, there are, and will continue to be, several efforts to address GHG emissions from federal activities, including BLM authorized uses.
Cultural Resources		X		Per the BLM State Historic Preservation Office (SHPO) protocol, because there will not be any ground-disturbance related to this action, this kind of undertaking is categorically exempt.
Environmental Justice	X			It is unlikely that minority or low-income communities are present or near the proposed project area.
Farmlands (Prime or Unique)	X			There are no prime or unique farmland designations in the district.
Invasive Species/ Noxious Weeds			X	This project will have a positive impact on noxious and invasive weeds by reducing weed populations. Carried forward for analysis.
Native American Religious Concerns		X		Based on previous consultations/ coordination with affected tribes, there are not any Native American concerns/issues that are related to this action.
Floodplains		X		The proposed action will not increase the existing floodplains nor will it create new floodplains. The floodplains have already been disturbed by the post-fire flood events.
Riparian/Wetlands Zones	X			The proposed action does not occur in a wetland/riparian zone.

Socioeconomics		X		While the proposed action may temporarily limit casual recreation in specific locations for the duration of the closure, it is likely there would be long term benefits to wildlife and casual recreationists resulting from the restoration efforts, and the potential impact is not likely to be to a degree that detailed analysis would be required.
Threatened, Endangered or Candidate Animal Species		X		The above proposed action has a no effect determination on the threatened desert tortoise (<i>Gopherus agassizii</i>). This project will have no effect on any other federally listed species or designated critical habitat. Minimization measures built into the proposed action will further reduce the risk of any negative impacts to threatened and endangered species.
Threatened, Endangered or Candidate Plant Species	X			There are no threatened, endangered, or candidate plant species in the project area.
Fish and Wildlife Excluding Federally Listed Species		X		<p>Wildlife species in the general area include small mammals, rodents, birds and reptiles.</p> <p>Additionally, the BLM sensitive species desert bighorn sheep, western burrowing owl, chuckwalla, banded gila monster, Mojave shovel-nosed snake, desert glossy snake, Mojave Desert sidewinder may be present in the general area.</p> <p>These species may be found on the adjacent undisturbed lands and could wander into the proposed project area. The primary direct impacts of the proposed action on wildlife would be mortality resulting from vehicle and equipment activities. Desert bighorn may be disturbed by vehicles operating in their habitat; however, these impacts will be minimal due to the limited number of vehicles associated with this action and will be temporary in nature. Animals may seek cover on steep slopes and ridges to avoid vehicular activity and associated noise pollution. Wildlife species in the general area are common and widely distributed throughout the area, and the loss of some individuals would have a negligible impact on populations of the species throughout the region. Impacts to BLM Sensitive Species are not anticipated to lead to further decline of the species range-wide as there is no new disturbance for this project.</p> <p>The proposed action will benefit the post fire recovery of wildlife habitat throughout the project area through seeding, soil stabilization and weed monitoring and treatments.</p>

Vegetation Excluding Federally Listed Species		X		<p>There are known occurrences of BLM sensitive plant species halfring milkvetch (<i>Astragalus mohavensis</i> var. <i>hemigyris</i>) in the general area. However, because the proposed action is restricted to existing roads and disturbed areas, no new impacts to BLM special status plants are expected. Minimization measures built into the proposed action will further reduce the risk of any negative impacts to BLM sensitive plant species.</p> <p>The proposed action is within the Mojave mid-elevation mixed desert scrub ecological system which represents the extensive desert scrub in the transition zone above <i>Larrea tridentata</i> – <i>Ambrosia dumosa</i> desert scrub and below the lower montane woodlands (700-1800 m elevations) that occurs in the eastern and central Mojave Desert. The proposed action will benefit the post fire recovery of this ecological system through seeding, soil stabilization and weed monitoring and treatments.</p>
Migratory Birds		X		<p>All activities are restricted to existing disturbed areas. As there will be no new surface disturbance associated with the proposed action, there will be no impact to migratory birds. The proposed action will benefit the post fire recovery of migratory bird habitat throughout the project area through seeding, soil stabilization and weed monitoring and treatments.</p>
Wastes (hazardous or solid)	X			<p>No hazardous waste concerns have been identified in the project area. However if any of the proposed activities that result from the approval of this analysis require the use of hazardous materials or cause hazardous waste as a result of operations, the materials or waste will be managed in accordance with all applicable laws, regulations and policy.</p>
Water Resources/ Quality (drinking/ surface/ground)			X	<p>This project will impact the local run-off conditions and surface flow characteristics. Carry forward for analysis.</p>
Geology /Mineral Resources/Energy Production		X		<p>No mining claims or mining operations are present in the project area. Mineral materials will not be severed from the property by this action or imported to the property. Mineral materials will just be redistributed at locations where road washouts occurred.</p>
Wild and Scenic Rivers	X			<p>No wild and scenic rivers or segments are located in the project area.</p>

Wilderness/Wilderness Study Areas		X		The project area is adjacent to La Madre Mountain Wilderness. However, no treatments will occur within the wilderness boundary and therefore wilderness characteristics will not be affected. There are no Wilderness Study Areas in the project area.
Lands with Wilderness Characteristics	X			There are no LWC designations in the project area.
Woodland /Forestry		X		Cactus and yucca are considered government property and regulated under the BLM Nevada forestry program. Because the proposed action is limited to existing roads and disturbed areas, no new impacts to cactus and yucca, acacia trees and other forestry products are expected
Visual Resources		X		The project area is comprised of Visual Resource Management Classes II and III. However, none of the proposed actions are expected draw the attention of a casual viewer except the temporary presence of vehicles as work is being performed. Restoration activities will help the burned areas better blend in with the surrounding landscape and will have a positive impact on visual resources.
Wild Horses and Burros			X	Portions of the project area are located in the Wheeler Pass Herd Management Area (HMA) and certain actions associated with the emergency stabilization could potentially impact the wild burros located there. Carried forward for analysis.
Soils		X		The proposed action will only occur on soils already disturbed by the fire and associated flooding.
Livestock Grazing		X		The project area is within the Wheeler Wash grazing allotment. However, there are no active permits in the allotment and therefore, there will be no impacts to livestock grazing.
Recreation		X		While the proposed action may temporarily limit recreation in specific locations for the duration of the closure, it is likely there will be a long term benefit to recreational use resulting from restoration efforts. Recreation will not be impacted to a level that detailed analysis would be required
Fuels/Fire Management		X		Overall this project will have a positive impact on Fuels Management by reducing the levels of invasive grasses, which are known to alter fire regimes. Compliance with fire restrictions current at time of project implementation will mitigate any risks introduced by the proposed actions. Specific, noncompliant activities may be waived on a case by case basis by a line officer after review and approval by the Fire Management Officer.

Hydrologic Conditions		X		The proposed action will not impact the hydrologic conditions of the local hydrographic basin.
Lands/Access		X		Primary access to the area would be by the use of existing roads and disturbed areas. There will be various entry points within the burned area accessed by foot, which is allowed due to it previously being disturbed by the fire.
Paleontology		X		Since there will not be any ground-disturbance related to the action, there will not be any impact to paleontological resources.
Rangeland Health Standards	X			The proposed action does not include any additional surface disturbance; therefore there will be no impacts to rangeland health.

Invasive Species / Noxious Weeds

Invasive plants and noxious weeds are managed on public lands by the BLM under the direction of the National Invasive Species Council (NISC) established in 1999 (Executive Order [EO] 13112). This statute defines invasive species as “...an alien (non-native) species whose introduction does, or is likely to cause, economic or environmental harm or harm to human health” (NISC 2008). In addition, much of the management of invasive plants and the listing of noxious weeds are regulated by the USDA under the Federal Noxious Weed Act (7 U.S.C. 2801 et seq. 1974).

Executive Order 13112 outlines the federal responsibility to “prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.” Additionally, Nevada Revised Statutes, Chapter 555.05 defines "noxious weeds" and mandates the extent that land owners and land management agencies must control specific noxious weed species on lands under their jurisdiction.

Southern Nevada lands are impacted by the presence of noxious and invasive, non-native vegetation. The Las Vegas Field Office (LVFO) has prepared the LVFO Weed Plan that provides guidance for an active integrated weed management program using Best Management Practices (BMPs).

Portions of the proposed project area and surrounding areas have been surveyed for noxious and invasive weeds during routine weed inventory surveys. Of the 47 species designated as noxious by the State of Nevada, 3 species have been documented within or nearby the general project area: Saltcedar (*Tamarix ramosissima*), Russian knapweed (*Acroptilon repens*), and Puncturevine (*Tribulus terrestris*).

Russian knapweed is classified as a Category B noxious weed and must be eradicated where the action is deemed feasible. It is recognized that for Category B species, some infestations may be too extensive to be realistically controlled or eradicated. Russian knapweed is typically found along roadsides and waterways.

Saltcedar is classified as a Category C noxious weed, indicating the species are present to such an extent that precludes active eradication in an environmental setting for many infestations. For species classified Category C, the main goal is to keep the population from spreading further. However, in isolate springs and riparian areas, eradication of saltcedar may be achieved. Within

the project area, Saltcedar occurs in areas where water is available close to the soil surface, such as around springs, washes, and riparian areas. Dense stands of saltcedar, in addition to forming a monoculture and precluding native plant recovery, can also drastically alter fire regimes by increasing fuel loads.

Puncturevine is classified as a Category C noxious weed as well, meaning eradication of this species on a landscape scale is not feasible. However, in isolated areas such as the project area, this noxious weed can be eradicated through an active integrated weed management program. Puncturevine prefers dry, sandy soils and is frequently found along roadsides, crop fields, and other disturbed areas.

Other noxious weeds that have been known to occur in the broader area of the project include Silverleaf nightshade (*Solanum elaeagnifolium*), Perennial pepperweed (*Lepidium latifolium*), several species of Knapweed, Malta starthistle (*Centaurea melitensis*), Johnsongrass (*Sorghum halepense*), Scotch thistle (*Onopordum acanthium*), Canada thistle (*Cirsium arvense*), Fountain grass (*Pennisetum setaceum*), and Giant reed (*Arundo donax*).

Additional invasive weeds (that are not designated as noxious) in the project area include (but are not limited to) Red brome (*Bromus madritensis rubens*), Cheatgrass (*Bromus tectorum*), Russian thistle (*Salsola tragus*), and Tumble mustard (*Sisymbrium irio*). Invasive weeds (particularly invasive annual grasses) are known to rapidly invade burned areas and to drastically alter fuel loads in shrub interspaces which would otherwise be bare. If invasive weeds are able to infest the burned area, it would not only preclude native plant and habitat recovery, but it would also place the site at a much higher risk of a re-burn.

Water Resources / Quality

One obvious hydrologic consequence of fire destroying vegetative canopies, reducing litter accumulations, or both is its consequent effects on precipitation interception losses. It is one of the largest changes in hydrologic response to short-duration, high-intensity summer rain storms brought about by fire. Most of the vegetative canopy and litter is completely lost in severe wildfires, and as a result, comparatively little postfire interception of precipitation occurs (Bond and van Wilgen 1996, Pyne and others 1996, DeBano and others 1998). The effect of fire on interception in this case is a likely increase in the amount of net precipitation reaching the soil surface—that is, the amount of throughfall. When only small quantities of a vegetative cover or litter are consumed in a fire of low severity, the effect of fire on the interception process is less pronounced. Persistence of pre-fire levels of litter and other decomposed organic matter is important in protecting the soil surface in those situations where vegetation is destroyed by fire. Increased soil loss through erosive processes is often a consequence when large quantities of both protective layers (vegetation and litter) are lost to fire.

Infiltration capacities of the soils in arid and semiarid regions are often higher on sites dominated by tree species than on shrub or grass-dominated sites. Typical summer severe thunderstorms often have high, short-duration rainfall bursts (for example, 10 to 15 minute downpours at the rate of 2 inches/hour (50 mm/hr). These rainfalls are often confined to 250 to 500 acres (1 to 2 km²) (Neary 2002). Infiltration properties of soils are often altered when fire destroys vegetation and litter covers on a watershed (Pyne and others 1996, DeBano and others 1998, Brooks and others 2003).

Wild Horse and Burro

Wild horse and burro herds should be managed in a thriving, natural ecological balance according to the Wild Free-Roaming Horses and Burros Act. The BLM regulations and policy state that wild horses and burros shall be managed as viable, self-sustaining populations of healthy animals in balance with other multiple uses and the productive capacity of their habitat (CFR 4700.0-6). A wild horse and burro population that is in balance with its rangeland habitat will be healthy and viable even when its habitat has been limited by severe drought, wildfires, and/or other uncontrollable and unforeseeable environmental influences.

Wild horses and burros are found within five herd management areas (HMAs) throughout the Southern Nevada District. The proposed project is located in the Wheeler Pass Herd Management Area (HMA). The Wheeler Pass HMA is part of the Spring Mountains Complex and was determined to have a carrying capacity of 933 AUMs that can be supported by the available forage; based on this calculation, the AML was set at 47 to 66 wild horses and 20 to 35 wild burros. This AML is based on the coordinated management between the BLM and the U.S. Forest Service. The Spring Mountain Complex is a large area comprised of several HMAs and wild horse territories (WHTs) with management of wild horses and burros being coordinated between the BLM and the U.S. Forest Service due to the movement of the animals throughout the complex. The 2014 estimated adult population is 109–164 wild burros and 335–443 wild horses. Some of the wild burro population live near the burned area.

Environmental Effects:

Invasive Species / Noxious Weeds

Proposed Action:

The Southern Nevada District public lands are being negatively affected by the presence of invasive, non-native vegetation. Weeds are seen as a major threat to ecosystem health in southern Nevada. The presence of weeds in any landscape increases the inter-specific competition for resources and in most situations weeds out-compete native plants and displace them. Noxious and invasive weeds can be found in the general project area and pose a threat to the recovery of the burned area. Many weeds are disturbance colonizers and will take advantage of the lack of competition from native vegetation that results from the wildfire. If weeds are able to invade the burned area, they have a high likelihood of precluding native vegetation recovery and they increase the chances of the area burning again.

Overall the proposed action will have a positive impact on the management of noxious and invasive weeds by reducing the size of existing weed populations and preventing the spread of weeds into the burned area. Native revegetation will provide competition that will keep weeds from infesting the burned area. Native vegetation will also benefit the area by stabilizing soils and improving wildlife habitat.

Increased vehicle and equipment traffic during the proposed project implementation may impact noxious and/or invasive weeds. Vehicles are effective at introducing and/or spreading weeds by discharging weed seed along roadways. Once noxious and invasive plant species are introduced to new areas they effectively compete with native species for sunlight, soil, water, nutrients, and space, thereby reducing native vegetation productivity. The increase in vehicular activity at the site has the potential to spread non-native invasive annual grasses. Studies show that the Mojave Desert is threatened by the spread of non-native, invasive annual grasses which results in increased fire and loss of natural resources (Brooks 1999). The increase of fine fuels may result in ignitions and ultimately increase the number of wildfires. Any potential negative impacts to the spread of invasive and/or noxious weeds will be reduced by following the mitigation measures described in the next section.

Mojave Desert wildfires are occurring at historically unprecedented frequencies and extents and have the potential to dramatically change the species composition in affected areas (Brooks and Matchett 2006). Therefore in addition to competing with native plant species, and reducing the productivity of rangelands, forest lands, riparian areas, and wetlands, the spread of invasive weed infestations, cheat grass in particular, increase fine fuels, thereby increasing the likelihood of fire.

Although the non-native annual grasses are not legally designated as noxious by the State of Nevada, their role within the Mojave desert ecosystem is increasingly important with respect to their relationship to fire and future disturbance.

Aggressively managing invasive or noxious species will limit residual effects to manageable levels. This is made possible by maintaining discontinuous, dispersed native vegetation, nonflammable native species, propagation and planting of native species, or complete removal of all vegetation.

No Action:

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Rehabilitation — Environmental Assessment
DOI-BLM-NV-S020-2014-0002-EA

Under the no action alternative, no treatments would be implemented to stabilize the burned area. Noxious and invasive weeds from the surrounding area are likely to move into the burned area due to the existing soil disturbance and lack of competition for resources. Natural recovery of burned areas in the Mojave Desert is extremely slow. Native vegetation would likely not begin to inhabit the site for many years, which is much slower than the time-line for weeds to infest the site. Burned areas in similar vegetation communities in the Mojave Desert have been quickly invaded by invasive annual grasses, which is likely to happen at this site as well if treatment is not implemented. These grasses preclude native plants from naturally establishing and also create a continuous bed of fine fuel which can alter fire intensity, frequency, and return intervals. If the area burns again, the damage and amount of time needed for recovery would be compounded. The federal government is required by law to manage noxious weeds on public lands. If designated noxious weeds are able to spread into the burned area from surrounding populations, treatment of these spreading populations would become much more complex and expensive. Infestation of the burned area by noxious weeds may also provide a conduit for these weed infestations to continue to spread into more remote regions within the area where sensitive species and resources would be negatively impacted.

Cumulative Impacts:

The Proposed Action is expected to have a positive impact on the management of invasive and noxious weeds. While there is a small chance of implementation activities spreading or introducing weeds to the project area, this risk will be negated by following the minimization measures in the next section. Other projects and activities occurring in RRCNCA in general include recreational activities, permitted tours and events, and Rights-of-Ways for utilities and infrastructure. These types of activities may result in cumulative impacts on native vegetation communities, including the potential spread of noxious and/or invasive weeds with the potential to adversely affect the Project area and adjacent lands. However this project is not expected to have any negative cumulative effects when combined with other activities in the area. If anything, this project will help reduce some of the negative impacts from other projects that have the potential to spread noxious and invasive weeds in the area. Additional wildfires in or nearby to the project area would have a negative impact, as wildfires in this area frequently result in a conversion from native vegetation to monocultures of invasive grasses, which increase the likelihood of a re-burn. However future fires in this area will also likely receive ESR treatment in order to address the impacts of weeds.

Water Resources / Quality

Proposed Action:

The treatments proposed will help detain storm runoff on site, thereby eliminating transport of eroded soils. If the design capacity is exceeded, the structure provides some secondary benefit by reducing slope length, which interrupts concentrated flows and sediment movement. Because of their small size, the effective life of properly installed treatments is only a few years at most. Undesigned and underdesigned treatments with wide spacing and lacking runoff storage capacity can effectively concentrate runoff and cause damage that might conceivably be greater than no treatment. It should be kept in mind that these structures are intended to detain runoff. If they immediately fill with sediment, they were likely underdesigned. Shallow, rocky soils that are uneven are problematic for anchoring, so care must be taken to ensure that logs are adequately secured to the slope. Overly rocky and steep slopes should be avoided because benefits gained from contour-felling treatment can be easily offset by the extra implementation time required and the limited capacity to detain runoff or provide stabilization of small amounts of soil. Gentler

slopes and finer textured soils (except clayey soils) lead to better installation and greater runoff control efficiency. In highly erosive soils derived from parent material such as granitics or glacial till, so much sediment can be mobilized that it might overwhelm small contour-felled logs. Availability of adequate numbers of straight trees must be present. By following the process outlined in the Mitigation Measures section, this treatment is more likely to produce positive results at detaining water and reducing sediment transport.

No Action:

Under the no action alternative, no treatments would be implemented to stabilize the burned area. Seeding and contour felling will not be implemented in order to stabilize soils. Sediment transport and concentrated flows during and following precipitation events would continue at current rates. Precipitation events would continue to erode the soil as there is no vegetation left on site to protect it. Sediment and debris would continue to flow down the burned area and flood downstream areas including portions of Las Vegas. Flows would continue to be at much higher rates than in unburned, vegetated areas.

Cumulative Impacts:

The proposed action is expected to have a positive impact on water resources and water quality. Other projects and activities occurring in RRCNCA in general include recreational activities, permitted tours and events, and Rights-of-Ways for utilities and infrastructure. These types of activities may result in cumulative impacts on water resources and water quality. However this project is not expected to have any negative cumulative effects when combined with other activities in the area. If anything, this project will help reduce some of the negative impacts from other projects. Additional wildfires in or nearby to the project area would have a negative impact on water resources and quality, as wildfires in this area frequently result in a complete burn-off of vegetation, leaving soil exposed and more vulnerable to transport during precipitation events. However future fires in this area will also likely receive ESR treatment in order to address the impacts on water and soil resources.

Wild Horse and Burro

Proposed Action:

Wildfires may be more likely to occur if non-native vegetation is allowed to spread and continue growing. Wildfires have the potential to greatly impact wild horses and burros. Wildfires can remove large areas of forage, damage water systems, impacts springs, and potentially trap and kill wild horses and burros if they are not able to escape the fires. Also, the increase in non-native vegetation can potentially affect the areas and the amount of native forage available to wild horses and burros for foraging. Reseeded areas may create a more desirable foraging location for wild burros, causing an increase in the forage utilization levels in that specific area. This project should positively benefit the wild burro population within that portion of the Wheeler Pass HMA by stabilizing the soil and helping rehabilitate the native rangeland vegetation and conditions.

No Action:

Under the no action alternative, no treatments would be implemented to stabilize the burned area. Noxious and invasive weeds from the surrounding area are likely to move into the burned area due to the existing soil disturbance and lack of competition for resources. Natural recovery of burned areas in the Mojave Desert is extremely slow. Native vegetation would likely not begin to inhabit the site for many years, which is much slower than the time-line for weeds to infest

the site. This would have a negative impact on the local wild horse and burro population as native forage would not be available in the burned area for many years. Additionally nonnative grasses that may infest the burned area would put the site at a higher risk of a re-burn. This would negatively impact wild horses and burros even further by removing forage, damaging water systems, and trapping and/or killing wild horses and burros.

Cumulative Impacts:

The Proposed Action is expected to have a positive impact on the local population of wild horses and burros. There is a small chance of implementation activities temporarily disrupting individual animals, however, this risk will be negated by following the minimization measures in the next section. Other projects and activities occurring in RRCNCA in general include recreational activities, permitted tours and events, and Rights-of-Ways for utilities and infrastructure. These types of activities may result in cumulative impacts on wild horses and burros by disturbing habitat and reducing forage. However this project is not expected to have any negative cumulative effects when combined with other activities in the area. If anything, this project will help reduce some of the negative impacts from other projects that have the potential to reduce available forage, increase invasive weeds, and reduce water quality and disturb water systems. Additional wildfires in or nearby to the project area would have a negative impact on wild horses and burros. However future fires in this area will also likely receive ESR treatment in order to address the negative impacts that may affect wild horses and burros.

MITIGATION MEASURES

Invasive Species / Noxious Weeds:

Access to the project area occurs on existing routes and disturbed areas and no additional disturbance is expected. If the following measures are integrated throughout the proposed project development and implementation, the introduction and spread of noxious and/or invasive weeds may be mitigated:

- Project related vehicles, equipment, and machinery (this especially includes the nooks and crannies of undercarriages and wheel wells) will be cleaned of all mud, dirt and plant parts before entering the project area;
- BLM Operation personnel shall include noxious weed surveys in their daily field going operations. If weed infested sites are located near the travel routes of treatment areas, they will be flagged and personnel will be instructed to avoid those sites;
- Operation personnel shall avoid or minimize all types of travel through weed- infested areas;
- Operation personnel shall locate stops and staging areas in areas that are relatively weed-free; and
- If project related vehicles, equipment, or personnel travel through a weed infested area, the equipment, vehicles, and clothing of personnel will need to be cleaned of all seed and plant parts prior to moving to weed free areas. (This includes the nooks and crannies of undercarriages on vehicles). Seeds and plant parts will be collected, bagged and deposited in dumpsters destined for local landfills.

Water Resources / Quality:

Contour-felled logs reduce water velocity, break up concentrated flows, induce hydraulic roughness to burned watersheds, and store sediment. The potential volume of sediment stored is highly dependent on slope, the layout design, the size and length of the felled trees, and the degree to which the felled trees are adequately staked and placed into ground contact. In some instances contour-felled log barriers have filled with sediment following the first several storm events after installation, while others have taken 1 to 2 years to fill (Robichaud 2000).

The primary function of the Contour Log Basins or Contour Log Terraces is to detain and infiltrate runoff from a design storm. To accomplish this, logs ranging generally from 6 to 12 inches (15 to 30 cm) in diameter should be felled on the contour and staked in place. The treatment should begin at the top of the slope because each course of contour logs depends on the design spacing and capacity of the upslope courses to be effective. The spacing depends on the capacity of the structure to contain runoff according to the formula:

$$S = RO/12 \times C$$

Where: S = spacing of log courses down slope measured horizontally in feet.

RO = Storm runoff in inches.

C = Basin capacity in cubic feet/lineal foot of log.

Basins should be created behind each log by scraping soil against the log to seal it. Earthen end sills and baffles complete the structure. To contain 1.0 inch (25 mm) of runoff typically requires spacing of less than 20 feet (9.6 m) between courses. Contour placement is vital, and eliminating long, uninterrupted flow paths by “brick coursing” provides additional effectiveness.

Wild Horse and Burro:

The following measures should be integrated throughout the proposed project implementation to reduce the risk of negative impacts to wild horses and burros:

- Individuals will not exceed 25 MPH speeds throughout the HMA;
- Individuals should remain at least 0.25 miles from the water sources in the HMA, to prevent unnecessary stress on the animals;
- Wild burros will be avoided if found in the treatment area; and
- Individuals will not harass (feed, pet, chase, etc.) wild horses and burros if encountered on or near the treatment areas, trails, or equipment parking areas. They are wild animals and can be unpredictable especially during foaling and breeding season.

List of Preparers

Table 2. List of Preparers

Name	Title	Responsible for the Following Section(s) of this Document
Hal Winlow	acting Fuels Specialist	Drafting EA and Associated Documents.
Lauren Brown	Weeds Specialist and ESR Coordinator	Drafting EA, DR, and FONSI, Editing

Internal Review by Resource Specialists

Name	Resource / Specialty
Lisa Christianson	Air Quality, Wastes, Greenhouse Gas Emissions
Katherine Kleinick	Botany, Vegetation, Forestry, Grazing, Rangeland Health
Mark Boatwright	Cultural Resources, Paleontology, Native American Religious Concerns
Boris Poff	Hydrology, Water Quality, Wetlands / Riparian, Soils, Floodplains
Susan Farkas	Environmental Justice, Socioeconomics
Krystal Johnson	Wild Horse and Burro, Farmlands
Evan Allen	Geology and Minerals
Lauren Brown	Noxious and Invasive Weeds, Fuels and Fire Management
Joseph Varner	Lands and Access
Kathy August	Recreation
Matthew Hamilton	Visual Resources, ACEC, Fish and Wildlife Excluding Federally Listed Species, Migratory Birds, Threatened Endangered or Candidate Animal Species
Sendi Kalcic	BLM Natural Areas, Wilderness/WSA, Lands with Wilderness Characteristics